

**University of Alberta**  
**Tentative syllabus (updated 6 Oct. 2014)**  
**Biology 633: Next-generation sequencing in molecular ecology**  
**Fall 2014**

**Instructor:** Dr. Felix Sperling

**Organizers & lecturers:** Julian Dupuis, René Malenfant, Joshua Miller

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**Web Page:** eClass

**Office Hours:** by appointment, also use eClass or email

**Lecture Room & Time:** Biosci Bldg, Botany wing 121; Friday 3-4:50 PM

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**Course Description:** \*1 (fi 2) (0-2s-0).

This course will provide a forum for students and researchers to discuss next-generation sequencing (NGS) technologies and analytical tools, and to develop conceptual knowledge and skills required to deal with NGS data.

**Course Prerequisites:** Consent of instructor.

**Course Objectives and Expected Learning Outcomes:** To develop a working base of knowledge regarding NGS technologies and analytical options, especially as it relates to molecular ecology; to interpret and discuss literature pertaining to generation and analysis of NGS data; to develop connections among researchers using the same tools in the department. Seminars will generally consist of a short introductory lecture containing background information and theory, and will be followed by practical exercises. Students should bring a laptop. Unix variants such as OS X and Linux are ubiquitous in bioinformatics; Windows users are encouraged to dual boot, install a virtual machine, or use a Unix-like environment such as Cygwin.

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**Required Textbook:** There is no required text. Readings consist of journal papers that can be downloaded from the University of Alberta library system.

**Grade Evaluation:** This course is a credit/no credit course. Credit will be determined by the instructor and lecturers based entirely on student participation in most of the classes. A minimum attendance of 75% of all seminars is required, though exceptions will be made at the discretion of the instructors. Grades are unofficial until approved by the Department of Biological Sciences.

**METHODS OF EVALUATION:**

The instructor and lecturers will evaluate student participation based on: 1) attendance, 2) contribution to group discussion and engagement/questions during lectures, 3) involvement in guided exercises, and 4) willingness to do self-guided research outside of class to facilitate in-class discussion.

**Tentative Schedule: Biol 633, Fall 2014**

All classes are on Fridays at 3:00-4:50. This schedule is tentative and may change depending on student interest. Additional topics may be added.

<b>Week/Date</b>	<b>Event</b>
1. Sept 12	Introduction, Linux/UNIX/OS X command-line and scripting
2. Sept 19	Genome assembly
3. Sept 26	Alignment and SNP calling
4. Oct 3	SNPs in phylogenetics
5. Oct 10	Population genomics
6. Oct 17	Landscape genomics
7. Oct 24	Outlier detection
8. Oct 31	Quantitative genetics
9. Nov 07	RAD-seq
10. Nov 14	No lecture
11. Nov 21	To be determined
12. Nov 28	To be determined

**Student Responsibilities:**

**ACADEMIC INTEGRITY:** "The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at [www.governance.ualberta.ca](http://www.governance.ualberta.ca)) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University."

All forms of dishonesty are unacceptable at the University. Any offence will be reported to the Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offences. Anyone who engages in these practices will receive [at minimum](#) a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science the sanction for **cheating** on any examination will include **a disciplinary failing grade** (NO EXCEPTIONS) and senior students should expect a period of suspension or expulsion from the University of Alberta.

**CELL PHONES:** Cell phones are to be turned off during lectures and seminars.

**STUDENTS ELIGIBLE FOR ACCESSIBILITY-RELATED ACCOMMODATIONS (students registered with Specialized Support & Disability Services - SSDS):** Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with SSDS deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommodations. Contact SSDS ([www.ssd.ualberta.ca](http://www.ssd.ualberta.ca)) for further information.

**STUDENT SUCCESS CENTRE:** Students who require additional help in developing strategies for better time management, study skills or examination skills should contact the Student Success Centre (2-300 Students' Union Building).

**Disclaimer:** Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

**Note:** Recording is permitted only with the prior written consent of the professor or if recording is part of an approved accommodation plan.

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